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Let's make them shorter!

Abbreviated loanwords in Japanese

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ABSTRACT

The focus of this thesis is to show the variety of Japanese loanwords' abbreviation processes. Nowadays loanwords play a big role in Japan's society. Most of loanwords are long and have some difficulty to integrate in Japanese language in their full forms. This is why most of the loanwords are shortened by the usage of various patterns and rules, which will be described and analyzed in this paper. However, the aim of this thesis is to find whether Japanese native speakers can abbreviate new borrowings (words that do not exist as Japanese loanwords) correctly by satisfying all rules and whether they are able to compound given loanwords in one. This thesis also will identify which pattern is being used the most by analyzing answers of Japanese speakers.

Keywords: Truncation, Japanese, abbreviation, abbreviation patterns, compound words

CONVENTIONS

For this thesis modified Hepburn Romanization system was used. Macrons will not be used. Instead of macrons double vowels will be used to indicate a long sound. Italics will be used to show Romanized Japanese words. Double quotations indicate distinguish English translation.

ABBREVIATIONS

L	light syllable
H	heavy syllable
σ	syllable
μ	mora
<i>chi</i>	accented mora <i>/chi/</i>
N	nasal
//	phonemic representation
C	consonant
V	vowel

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1. INTRODUCTION

Nowadays loanwords are one of the biggest part of Japanese language. It can be found everywhere. Modern Japanese language contains uncounted number of loanwords from other languages and most of them are 5 or more mora long, the Japanese learned how to shorten them and create a variety of patterns and truncate the processes. However, word truncation is not a new thing for Japanese. The most common example of truncation in native Japanese is hypocoristic. It is Japanese name shortenings created by using bimoraic foot template and adding suffix *-chaN* (Mester, 1990:479). Suffix *-chaN* is used just for female names which makes it diminutive or to show close relations between speakers. Few examples are given bellow (1).

- (1) *Saiko* → *Sai-chaN*
Yukiko → *Yuki-chaN*
Makoto → *Mako-chaN*
Akira → *Aki-chaN*
Megumi → *Megu-chaN*

Moreover, most Sino-Japanese words are truncated when they are being merged together in order to make a compound word, which usually consists of two morphemes. These compounds are called stem compounds. Stems can be made out of one syllable with 1 or 2 moras, which is completely normal for compounds. Usually parts of compound truncations cannot exist as abbreviation of single word.

- (2) *tookyoo + daigaku* → *toodai* "Tokyo University"
kokusai + reNgo → *kokureN* "United Nations"
suiyoobi + kiNyooobi → *suikiN* "Wednesday – Friday"

The compounds given in (2) shows that the following shortenings are created on native Sino-Japanese model. (Itô, 1990:229). (3b) shows, that the same native truncation pattern for compounds, loanword shortenings also takes bimoraic parts from left edge of each compound element and creates one compound abbreviation. Further examination of these patterns and rules will be given in chapter 3.

- (3a) *misuteeku* → *misu* “mistake”
aNauNsaa → *aNa* “announcer”
- (3b) *sekushuaru + harasumeNto* → *sekuhara* “sexual harassment”
rajio + koNtorooru → *rajikoN* “radio-controlled”

1.2. METHODOLOGY AND ORGANIZATION

This thesis will be divided in 3 chapters. In chapter 2 will be given all the information about truncation processes, patterns and phonology. Main rules, productive abbreviations of loanwords, patterns and prosodic hierarchy will be analyzed and discussed.

In chapter 3 answers of questionnaire will be examined. This chapter is divided into 3 parts: truncation patterns, single words analysis and compound words analysis. By the usage of questionnaire, native Japanese speakers were asked to create new shortened loanwords + loanword compounds out of English words that do not exist. The main purpose of chapter 3 is to distinguish wheter native speakers are able to create new loanwords, shorten them and compound them in appropriate way. Answers of participants will be analyzed by using gathered information in chapter 2.

2. PREVIOUS RESEARCH

2.1. INTRODUCTION

After World War II, Japanese lexicon was supplemented by thousands of English loanwords. Nowadays, Japanese language consists of more than 50,000 foreign words and from all Western languages, more than 80% are English. (Olah, 2007:178) And this number is still growing. Those loanwords can be found in Japanese commercials, media, everyday spoken language and technology. For this reason, Japanese adjusted their own native phonology, writing system and grammar rules for all English loanwords.

2.2. PHONOLOGY

It is noticeable that English phonetics is richer with various sounds comparing with Japanese sounds. In this case, Japanese had to find a way how to write and pronounce new loanwords. Nowadays we already know that Japanese loanwords are written in moraic writing system *katakana* and have specific pronunciation.

Japanese sounds are usually consisted of consonant + vowel sounds, for that reason some extra vowels are added to English loanwords to make it easier for native Japanese speakers to pronounce them. Those vowels are called epenthetic vowels. As Irwin (2011) claims, the common and most used epenthetic vowel is /u/: *pabu* "pub", *guriin* "green". Epenthetic /i/ is inserted usually after English final-consonant sound 'k' or 'g', clusters 'ks', 'ksh' and 'ch': *keeki* "cake", *ekisupeeto* "expert". There are some words where epenthetic vowel is /o/, which is usually added after /t d/ English sounds: *sutoreeto* "straight". The reason why /o/ is inserted after /t d/ is because if we will add /i/ or /u/ sounds they will be different from original ones. Japanese do not have sounds as /ti/ or /du/; they will be changed into /chi/ and /tsu/ sounds. Finally, epenthetic vowel /a/ is added just in some old English loanwords like *sarada* "salad".

In Japanese, as it already known, those vowel + consonant sounds are made of 5 short vowels: a, i, u, e, o and 16 consonants, which make a unit called mora (μ). Moras play a very important role in Japanese phonology. They make about 100 syllables (σ) in Japanese sound system (Kay, 1995:69). Poser (1990) and Inaba (1998) tried to illustrate syllable and mora counting in haiku¹ (4a), (4b).

(4a) Syllable = mora

a ki no yo o "this autumn night
u chi ku zu shi ta ru brought to naught
ha na shi ka na by our storytelling" Matsuo Basho (1644-1694)

First line
 σ σ σ σ σ
 \downarrow \downarrow \downarrow \downarrow \downarrow
 μ μ μ μ μ
 \downarrow \downarrow \downarrow \downarrow \downarrow
a ki no yo o

Second line
 σ σ σ σ σ σ σ
 \downarrow \downarrow \downarrow \downarrow \downarrow \downarrow \downarrow
 μ μ μ μ μ μ μ
 \downarrow \downarrow \downarrow \downarrow \downarrow \downarrow \downarrow
u chi ku zu shi ta ru

Third line
 σ σ σ σ σ
 \downarrow \downarrow \downarrow \downarrow \downarrow
 μ μ μ μ μ
 \downarrow \downarrow \downarrow \downarrow \downarrow
ha na shi ka na

(4b) Syllable \neq mora

su ki ma ka ze "wind through the cracks
juu ni shin shoo the twelve heavenly generals
mi na o ko ru look so angry" Awano Seiho (1899-1992)

First line
 σ σ σ σ σ
 \downarrow \downarrow \downarrow \downarrow \downarrow
 μ μ μ μ μ
 \downarrow \downarrow \downarrow \downarrow \downarrow
su ki ma ka ze

Second line
 σ σ σ σ
 \therefore \therefore \vdots \therefore \vdots \vdots \therefore
 μ μ μ μ μ μ μ
 \downarrow \downarrow \downarrow \downarrow \downarrow \downarrow \downarrow
ju u ni si N sho o

	σ	σ	σ	σ	σ
	↓	↓	↓	↓	↓
Third line	μ	μ	μ	μ	μ
	↓	↓	↓	↓	↓
	<i>mi</i>	<i>na</i>	<i>o</i>	<i>ko</i>	<i>ru</i>

By these haiku mappings it is possible to recognize, that mora and syllable counting can disagree.

If mora unit is made of at least one vowel it is called as a single mora. In this case, all *katakana* and *hiragana* units can be called moras. Final consonants add mora weight for syllable. Therefore, syllables are divided in 3 types according their heaviness: light, heavy and super heavy syllables. However, it is attempt to avoid super heavy syllable, especially for truncations. (Kuwamoto, 1998:26)

2.3. SINO-JAPANESE TRUNCATIONS

In Sino-Japanese truncations always existed. The most recognizable truncations are used for girl names. It is made by adding suffix *-chaN* after the shortened name, which indicates kinship and close relations. This kind of name arrangement is called hypocoristic formation. (Poser, 1990:81) Although, suffix *-chaN* is mostly used for female names, Poser (1990) also uses male name truncations. Most common name truncations are bimoraic. They have different types of truncation and rules:

- | | | | | |
|-----|----------------|---|-----------------|------------------------------------|
| (5) | <i>makoto</i> | → | <i>makochaN</i> | (mid-morpheme truncation) |
| | <i>taroo</i> | → | <i>tarochN</i> | (truncation in mid syllable) |
| | <i>Yooko</i> | → | <i>yoochaN</i> | (first syllable with long vowel) |
| | <i>taizoo</i> | → | <i>taichaN</i> | (first syllable with diphthong) |
| | <i>kiNsuke</i> | → | <i>kiNchaN</i> | (first syllable closed by nasal N) |
| | <i>motoko</i> | → | <i>mokochaN</i> | (irregular) |
| | <i>hiroko</i> | → | <i>hiichaN</i> | (lengthened base form) |

Examples (5) just prove that all truncations are based only on two moras. In this case, there is no monomoraic hypocoristic. On the other hand, longer names can be truncated into 4 moras and consist 2 syllables.

However, not only suffix *-chan* requires name abbreviation. Honorific prefix *o-* and suffix *-san* also indicates truncation. In this case, instead of names, surnames are usually truncated. These kinds of titles are usually used for regular clients in bars (6).

(6) *hoNda* → *ohoosaN*
taNaka → *otaasaN*

And also Poster (1990) claims that rustic females' names² requires only prefix *o-* and truncated name. In this case, these kinds of name modification do not require many rules as in (5). However, names cannot be longer than bimoraic or have lengthened vowels (7):

(7) *yukiko* → *oyuki*
midori → *omido*

Moreover, not only names are shortened in native Japanese, but Japanese compound words as well. Sino-Japanese has two types of compound word formations: word + word (8) and stem + stem (9) (Itô, 1990). In other words word + word combination can be called free compounds, where each element of compound word can stand as a single word; and stem + stem are also called bound compounds- compound elements cannot stand independently from each other.

(8) *fuyu + keshiki = fuyugesiki* "winter scenery"

(9) *dai + gaku = daigaku* "university"

Bound compounds have an important feature; stem compounds can be truncated and make new compound words. Two words that are made of stem compounds can be clipped and a new-truncated word can be formed. Often the beginnings of each compound element morpheme are left:

(10) koku + yuu tetsu + doo = koku + tetsu "state railway"

It is considered that loanwords truncations are based on Sino-Japanese abbreviation patterns.

2.4. LOANWORD ABBREVIATIONS

In native Japanese language it is not usual to have long words. As it was mentioned before, English loanwords have to be changed and adapted into Japanese moraic system. In this case, many loanwords that are converted into Japanese writing system became long and hard to pronounce for native Japanese speakers. Through the years Japanese speakers have made rules and have used their own native models for loanword truncations. Some of them meet different requirements for single loanwords and compound ones.

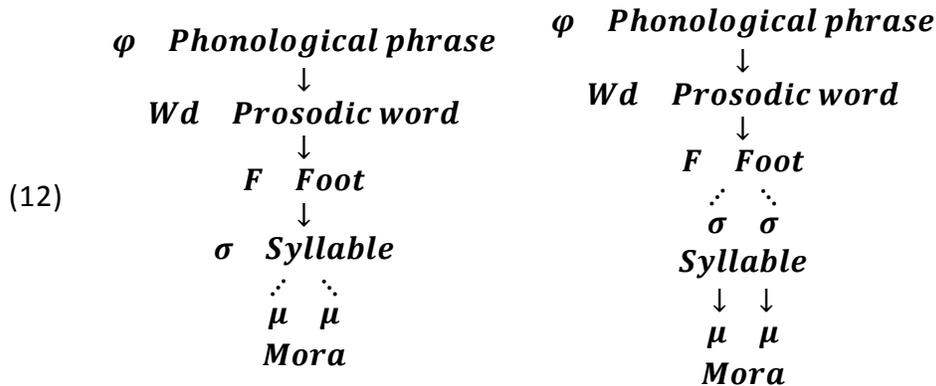
Most common number of mora that concludes truncations, either they are single words or compound loanwords, are 2, 3 or 4 moras. There exist few exceptions of loanword abbreviations that consist of 1 or more than 5 mora (Itô, 1990:217). However, Kubozono (2010) suggests, that 5 or more mora are not acceptable for loanword truncations. In this case, it is suggested that single words and compounds should not consist of 5 or more moras. This rule is not very strict compared to the other ones; however it is one of the main rules.

For abbreviations it is very important to not violate any rules, requirements and patterns. All patterns consist of light or heavy syllables. The heaviness of the syllable was explained in section 2.2. In this case, [L] stands for light syllable, which consists of consonant unit and a vowel – mora (CV). And [H] stands for heavy syllable, which consists of mora + vowel (CVV) or + nasal N (CVN). As mentioned before, super heavy syllable also exist, it consist of mora + vowel + nasal (CVVC). Moreover, super heavy syllable makes it to be trimoraic syllable, which vilolates the rule, that syllables can be only bimoraic. For this reason, in abbreviations (mostly compound truncations) this syllable have tendency to be avoided (Kuwamoto, 1998:26):

(11) *sauNdo + toraku = saNtora* (~~*sauNtora**~~) “sound track”

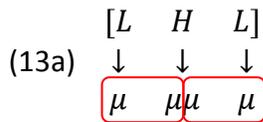
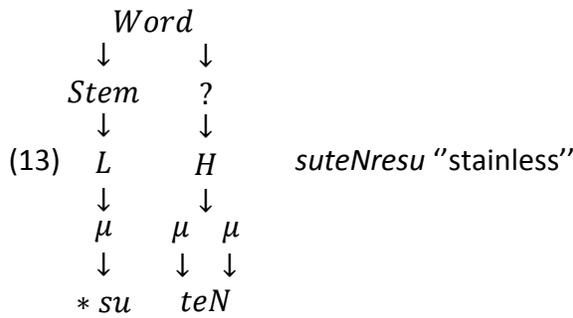
Therefore all submitted patters consist only of light and heavy syllables. Itô (1990) and Labrune (2002) introduce 7 productive and 4*³ unproductive patterns for single words, which will be presented in chapter 3. All of productive patterns cannot consist of less than 2 mora and 2 syllables and exceed 4 moras and 4 syllables. In this case, patterns that have only one light or heavy syllable are considered as unproductive ones. Patterns that first syllable is light, and second is heavy syllable, do not give desired results and also are treated as weak ones.

Itô and Mester (2003) introduce prosodic hierarchy where each element are bounded and cannot violate each other (Itô and Mester, 2003:2):

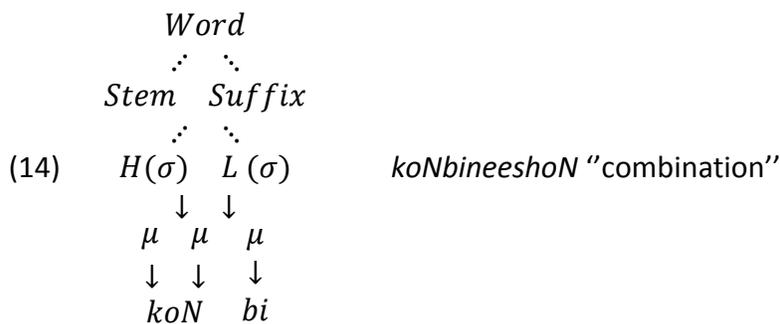


This explains that prosodic word should consist of at least one foot. Foot is equal to minimal stem and always is considered as bimoraic, in this case, it should consist at least one syllable. As the result of that, foot can be made out of single heavy syllable or two light syllables, which clarify that every light syllable consists of 1 mora and heavy syllable – 2 moras. This hierarchy is very important for truncation patterns. It also explains why there exist 4 unproductive patterns that were submitted above.

Loanword abbreviations have to be bimoraic and have foot that also is treated as bimoraic element. In this case, it is impossible to find any monosyllabic and monomoraic abbreviations that have pattern [L]. Although pattern [H] is bimoraic, heavy monosyllable does not satisfy minimal word requirements, which should consist of more than one syllable. Patterns [L + H] and [L + H + L] are unproductive, because foot is ranked higher in prosodic hierarchy and should be dominant part in a truncation. In this case foot can be made out of 2 light syllables or one heavy syllable. Patterns [L + H] and [L + H + L] show that foot part (first syllable) is too “light” to be dominant and violates prosodic hierarchy. (13). Moreover, according to Itô (1990): “The wellformed four-mora patterns involve a sequence of two bimoraic stem templates and are in effected prosodic compounds.” (Itô, 1990:232) It means that it should be possible to divide every truncated word in 2 mora halves. However, patter [L + H + L] is not dividible. (13a) The heavy syllabe cannot fit in any part of prosodic compound, that Itô was talking about previously.



Another, also really important requirement is called left-edge requirement. This requirement suggests to retain the most left minimal stem (word) – a word that consists at least of one bimoraic foot, or in other words, of more than one syllable in it. In this case, it seems that only bimoraic or disyllabic abbreviations can exist. However, it is possible to make 3 and 4 mora truncations in order not to violate prosodic hierarchy. For this case, Japanese is very flexible language because it is called as suffixing language - in Japanese suffixes can be added easily to almost every word. This is why it is possible to add required moras that follow after minimal stem and these added moras can be interpreted as suffixes (Itô, 1990:230):



Mapping (14) shows that stem takes over the most-left edge of the word. On the other hand, there also exist right-edge rule, where the most right part is retained. However, this latter pattern is considered as very rare.

Moreover, Itô and Mester (2003) have suggested, that words are made of foot, not out of free standing syllables. In this case left-edge of output should match with left-edge input. (Itô and Mester, 2003:30) Sometimes lengthened vowels can be cut or shortened; however, a

lengthening of short mora is strictly banned for loanword truncation. Itô (1990:225) explains that this kind of lengthening can exist only for native words and mostly compounds.

In any case, even if all rules would be satisfied, it is possible to get more than one abbreviation. For this reason Labrune (2002) made a hypothesis about pitch-accented⁴ mora (further in text – accented mora) (Labrune, 2002:10). She claims that input, which consists of more than 4 moras must be clipped right before accented mora (15):

- (15) shiNpo**ji**umu → shiNpo “symposium”
 terorizumu → tero “terrorism”

However, these inputs have accent on third or fourth mora. For this reason, according to Labrune (2002), words that have accent on first or second mora, will be clipped to 2 moras. In case, accent falls on heavy syllable, output should have 3 moras.

- (16) ekoro**j**ii → eko [L + L] “eco-friendly”
 meN**t**enaNsu → meNte [H + L] “maintenance”

Nevertheless, Kubozono (2010) and Irwin (2011) are not satisfied with this hypothesis. This rule has a lot of issues that need further investigations.

Compound words, same as single words, have their own truncation rules, mainly based on native word truncation model as well. They can also have back and front truncations, just they do not suit for both word clippings. Usually only first or second element are retained. However, the most popular truncation is double truncation, when both elements of compound word are truncated and merged into one compound word. Taniguchi (2013) and Nishihara (2001) suggest to use constraint-ranking. This ranking is based on optimality theory: “A framework in theoretical linguistics, used to formalize analyses in phonology, and less frequently other areas of linguistics. Its core is the assumption that linguistic generalizations should be described using a set of violable constraints on surface representations which are ranked in terms of their importance.” (Patrick Honeybone, 2009:145). It means, that higher ranked constraints cannot be violated in any case, because the word cannot exist or be productive only on lower ranked constraint. Meanwhile, lower ranked ones can be violated, only when higher ranked constraints do not violated between themselves. A word can be examined by making alternatives that satisfy the top ranked constraint (which would be the best fitting alternative), a second alternative, that satisfy second ranked constraint and so on, till lowest ranked constraint.

By this ranking, it is visible which rules are ranked higher than others. Based on Nishihara (2001) this is how ranking should look like:

Higher ranked constrains:

1. Final consonants are not accepted except nasal N;
2. "prosodic segments contiguous in the input must be contiguous in the output (i.e., no "skipping" of prosodic material)" (Taniguchi, 2013:3);
3. The element that stands most left in compound must be kept in the abbreviated output;
4. Lengthened vowel at the end of abbreviated compound cannot be accepted.

Lower ranked constrains:

1. Truncation should be bimoraic;
2. Both elements in compound must be minimally analyzed into the abbreviation (only, for double abbreviation).

George (2011) and Irwin (2011) introduce a lot of numbers about most common truncation processes. George (2011) writes that most common moraic length for single loanwords in general is 3 mora clippings (38%) and 4 mora clippings are most common for compound abbreviations (55%) (George, 2011:49). Moreover, Irwin (2011) shows bigger variety of shortenings and moraic length for single words. In general, Irwin divides mora clippings in 3 types: back-clipping, mid-clipping, fore-clipping. He also submits most popular clipping types, patterns and numbers of moraic length kept in abbreviations. According to Irwin, most popular clipping type is back-clipping. Itô (1990), Itô and Mester (2003), Labrune (2002) and Oda (2006) this kind of clippings also call most-left or truncations based on left-edge requirement. 3 and 2 light syllable truncations are most popular for this type of abbreviations. It means that 2 and 3 moras are retained on left edge of input. The second most popular clipping type is fore-clipping. This type, in general, does not have many abbreviations. The most popular pattern for this type is considered heavy + light [H + L] syllable in this case 3 mora are kept on the right edge (ending of input). And the rarest clipping type is called mid-clipping. Here, most dominant are 4 moras that were taken out from different parts of input. And the most popular pattern for mid-clipping is [H + L + L] or [L + L + H]. However, mid-clipping consists only of 20 abbreviations in all.

Of course, every rule has irregular truncations that cannot be explained through the rules or requirements. Luckily, there are only a few of them and most of them are violating only in mora numbers.

3. PERSONAL RESEARCH

3.1. INTRODUCTION

Although there are a lot of rules and patterns for loanword abbreviations, it is unknown whether it can be applied for newly formed words or not. In all the papers, that have been examined earlier, only already existing words were analyzed, which some are ill-formed, so they were analyzed in more detail by searching the right answers. In this chapter patterns will be analyzed deeper, and they will be tested out on newly made loanwords. Japanese ability to create truncations and compound words out of English borrowings without any suggested patterns and rules also will be examined.

3.2. METHOD

In order to get to know if native Japanese speakers know how to abbreviate a loanword I have made a list of 10 single English words and 6 compound words. Majority of single words were taken from British-English dictionary, except 2 words: marvelous, which is American-English, and herbatious, which is newly-coined word, used to describe a strong herb and root tastes. Moreover, some compounds have logical meanings, while the other ones, can be considered as nonsense compounds. I have put these words in compounds words list to show that the same words can be truncated differently; depending on the word position, whether they are single words or an element of compound word.

Single words list:
Ludicrous
Shrubbery
Enchanting
Herbatious
Accommodation
Eglantine
Marvelous
Balderdash
Confidence
Conspicuous

Compound words list:
Tropical + Shrubbery
Herbatious + Eglantine
Conspicuous + Confidence
Enchanting + Balderdash
Temporary + Accommodation
Marvelous + Rascal

I have given this list to 15 Japanese speakers and I have asked to make their own loanwords by shortening the given ones. Words were given in original English script (Latin letters). However, out of 15 participants I have got 12 answers – 5 of them were from males and 7 from females and one more male respondent (13th) submitted answers only for single words. Majority of single word answers differed - not just in truncations, but also in *katakana* writings. I assume it is because of different English language knowledge of participants. Some of respondents have been studying English language longer than the others. Nonetheless, it is natural that answers were not alike, because participants relied on notions of intuition and rules, which are implicitly coded as part of one's linguistic competence. George (2011) in his paper, also describes, why we get different answers, because of different speakers and their intuition, although he is taking into consideration morphemic boundary. (George, 2011:51-53) I also wanted to check if Japanese native speakers can compound two words and at the same time truncate them. Most of the compound words were not abbreviated, which made me wonder if I have chosen suitable words, although I basically used the same words as I did in "single words" list. Hence, I have decided to analyze their answers and see whether those abbreviations can exist in Japanese language as loanwords or not. I also noticed that, Japanese participants, truncated words by dividing the process in two steps. By the first step they syllabified the given word into Japanese phonotactics and by second step they wrote an already truncated word. It have happened because Japanese native speakers cannot truncate a English word without the meaning of it and "Japanized" full-formed word. And we can only guess the full katakana word of the participants, who submitted only second step. As a result I will show what steps each participant took. The tables with the participants' answers can be found in section "appendix". Along with my analysis I am going to model mappings of created words, which makes it easier to understand the given patterns of truncation and numbers of mora.

3.2.1. TRUNCATION PATTERNS

According to the information that I have submitted previously (chapter 2), I have made the list of the most common patterns for truncation. These patterns are mainly based on Itô (1990) and Kubozono (2010) analyzed patterns.

(i) Single word patterns:

	Pattern	Number of mora	Number of syllables
1.	[L + L]	2 μ	2 σ
2.	[H + L]	3 μ	2 σ
3.	[L + L + L]	3 μ	3 σ
4.	[H + H]	4 μ	2 σ
5.	[H + L + L]	4 μ	3 σ
6.	[L + L + H]	4 μ	3 σ
7.	[L + L + L + L]	4 μ	4 σ

(ii) Unproductive single word patterns*:

	Pattern	Number of mora	Number of syllables
1*	[L]	1 μ	1 σ
2*	[H]	2 μ	1 σ
3*	[L + H]	3 μ	2 σ
4*	[L + H + L]	4 μ	3 σ

L=light syllable H=heavy syllable

A single word abbreviation requires accented mora rule as Labrune (2002), Irwin (2011) and Kubozono (2010) suggest. Accented mora rule allows us to discover only one productive truncation. However, I am using newly formed loanwords, which do not have particular accent yet. In this case, together with pattern analysis I am going to detect possible accents in new-formed loanwords.

Moreover, Japanese loanword compounds can become long enough; therefore, Japanese native speakers start to abbreviate them too. Most of loanword compounds have double abbreviation, where both elements are truncated. Nevertheless, back and front truncations leaving one of the elements in a compound word as single element, also exist.

Also I have decided to concentrate on double abbreviations, because the majority of compounds are made in this way (Irwin, 2011:144). Itô (1990) suggests to us 3 patterns for double abbreviations:

(iii)

Pattern	Number of moras
[1 μ + 1 μ]	2 μ
[2 μ + 1 μ]	3 μ
[2 μ + 2 μ]	4 μ

However, Irwin (2011) claims, that there are 2 more possible patterns nowadays: $[1\mu + 3\mu]$ or $[3\mu + 1\mu]$. By any means, they also consist only 4μ in all.

As we can see in table (iii) syllables are not important for compound word truncations, which reduce number of possible patterns. Compound words as single words are limited to only 4μ truncation. Moreover, I am going to use the rule proposed by Taniguchi for lengthened vowel at the end of compound truncation that is called sonority distance if there will be shortenings with lightened vowel on last mora in compound abbreviation.

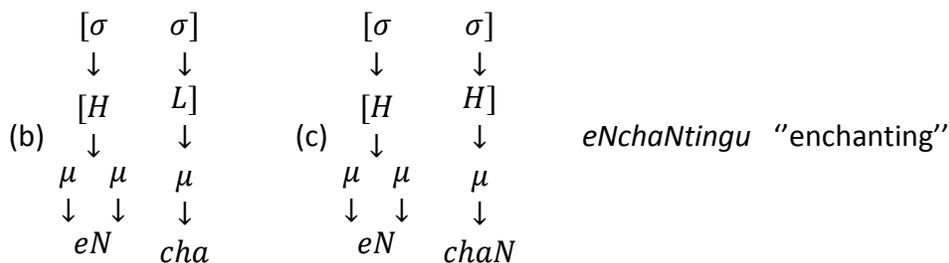
3.3. ANALYSIS

3.3.1. SINGLE WORDS

Firstly, I started with single words and I recognized that Japanese native speakers did not have any trouble with syllabification of words that had nasal sound at the beginning of a word. They all recognized a heavy syllable at the beginning. All participants that made first or both steps agreed with same full word pattern: $[H + H + H + L]$ for word “enchanted”, $[H + L + H + L]$ for word “confidence” and $[H + L + L + H + L]$ for word “conspicuous”. By knowing full word patterns we can predict possible truncations.

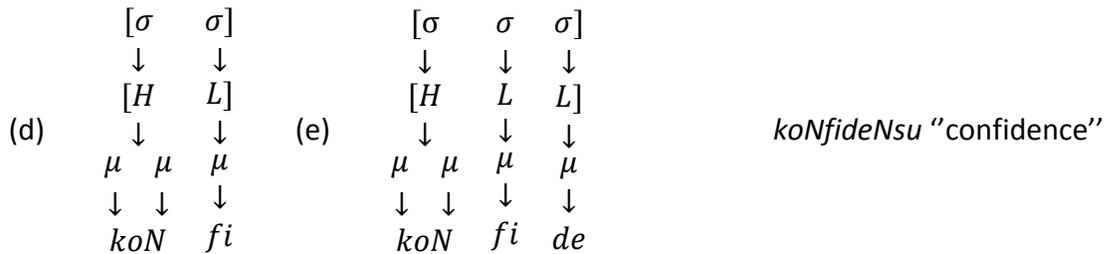
(1)	Enchanting (<i>eNchaNtiNgu</i>)	Confidence (<i>coNfideNsu</i>)	Conspicuous (<i>koNsupikyusu</i>) ⁵
	$[H + H]$ <i>eNchaN</i>	$[H + L]$ <i>koNfi</i>	$[H + L]$ <i>koNsu</i>
	$[H + L]$ <i>eNcha</i>	$[H + L + L]$ <i>confide</i>	$[H + L + L]$ <i>koNsupi</i>

In case of “enchanted” majority of participants made *katakana* word mostly after spelling instead of pronunciation. It shows the last light syllable *gu* in full word pattern. Also only 4 (participants no. 5, 7, 8, 12) of participants left word “enchanted” in a full form, which allow us to understand that most of native speakers did not have any problems to find abbreviations. The most of often suggested abbreviations are *eNcha* and *eNchaN* as we have predicted at the beginning. There were 4 persons (no. 1, 4, 11, 13) that submitted word *eNchaN* as truncation and 3 persons (no. 2, 3, 6) submitted word *eNcha*.

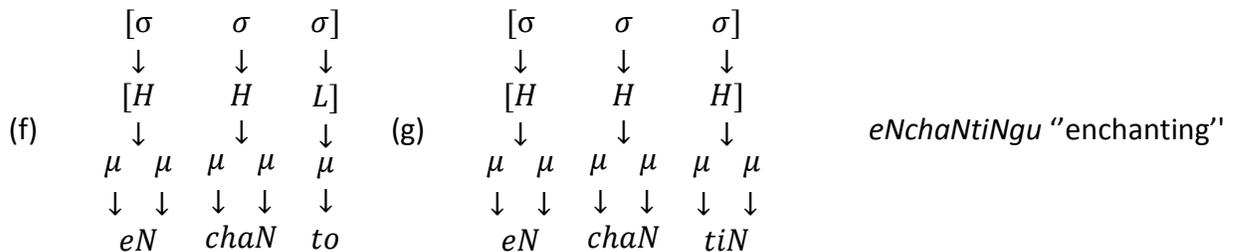


In this case, it is more likely that pattern [H + H] will be used for truncation.

In case of word “confidence” majority of participants did not shorten the word and only 4 participants submitted truncations: 2 truncations of *koNfi* (participants no. 3, 12) and 2 truncations of *koNfide* (no.2, 6) . Mappings (d) and (e) show that both words do fit 4 mora pattern, which makes it as productive abbreviation.



2 participants (no. 10, 9) submitted patterns [H + H + L] and [H + H + H] for word “enchanted”. Different from *koNfi* and *koNfide*, both patterns for “enchanted” violate a rule, where 5 or more moras are not allowed (Kubozono, 2010:19) On the other hand, Irwin (2011) claim, that words with more than 4 moras, can exist, but they are usually exceptions for already existing clippings. In this case, we are trying to find all possible truncations, which do not violate any rule.



By analyzing mappings (f) and (g) we can clearly see number of moras that also violate < 5 μ. Both unproductive patterns were not included in table (1).

However, in case of word “conspicuous” all participants, who made abbreviations, submitted a truncation *koNsupi*, which has pattern [H + L + L]. All participants agreed with same pattern of truncation. Word “conspicuous”, made up the least problems for truncation process.

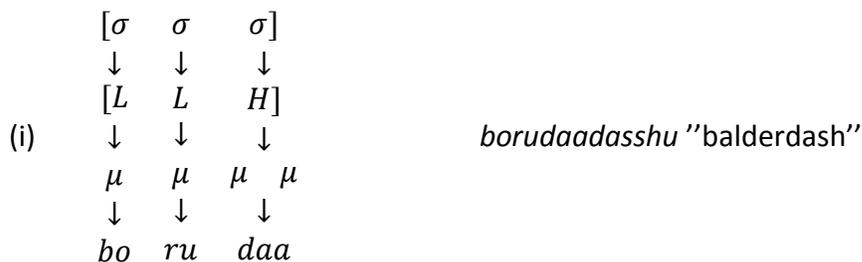


In this case we can guess that *eNchaNtiNgu* should be accented on second /**cha**/ or third /**ti**/mora. A word *koNfideNsu* should be accented on /**fi**/ or /**de**/ and word *koNsupikyuasu* should have accent on mora /**kyu**/. On the other hand, unproductive patterns would have different accents, but they would violate 5 mora rule. After detecting accents and truncation patterns we can notice, that Japanese native speakers find it easier to choose the right truncation for a loanword if it mainly formed of light syllables as in word *koNsupikyuasu*.

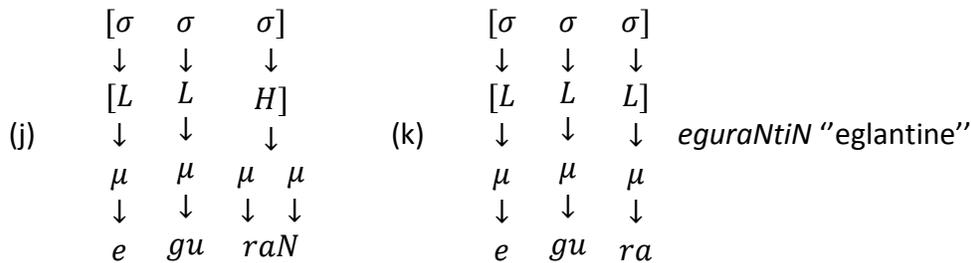
In this case, words as “accommodation”, “eglantine”, “shrubbery” and “balderdash”, should be easier to abbreviate too. Mainly because of newly formed full word patterns with few light syllables at the beginning: [L + L + L + H + H], [L + L + H + H], [L + L + L + H], [L + L + H + L + L]. These patterns clearly illustrate the dominance of light syllables in these words. There also is possibility that some words will be made only out of light syllables. Unfortunately, light syllables allow us to predict wider variety of productive patterns. However, It can cause problems, to find only one answer – productive truncation.

(2)	Accommodation (<i>akomodeeshoN</i>)	Eglantine (<i>eguraNtiN</i>)	Shrubbery (<i>shuraberii</i>)	Balderdash (<i>borudaadashu</i>)	Ludicrous (<i>rudikurasu</i>)
	[L + L] <i>ako</i>	[L + L] <i>egu</i>	[L + L] <i>shura</i>	[L + L] <i>boru</i>	[L + L] <i>rudi</i>
	[L + L + L] <i>akomo</i>	[L + L + L] <i>egura</i>	[L + L + L] <i>shurabe</i>	[L + L + L] <i>boruda</i>	[L + L + L] <i>rudiku</i>
	[L + L + L + L] <i>akomode</i>	[L + L + H] <i>eguraN</i>	[L + L + L + L] <i>shuraberi</i>	[L + L + H] <i>borudaa</i>	[L + L + L + L] <i>rudikura</i>

By analyzing all participants’ submitted abbreviation patterns, I have realized, that only one person (nr.4) submitted 2 mora, 2 syllable pattern. That participant suggested this pattern for word “balderdash” and gave us shortening *baru*. The first syllable is different from my predicted disyllabic pattern prediction, but I just can guess that not all participants knew how to pronounce this word and therefore they have based their *katakana* words on spelling. That is why some vowels differ. By any means, it does not affect the process of truncation. In further examination of word “balderdash” I have realized that only 5 participants (no. 2, 3, 4, 6, 13) submitted abbreviations and just 2 of them (no. 3, 13) suggested us to use the same pattern [L + L + H].



Pattern [L + L + H] was also submitted as most suitable pattern for word “eglantine”. 7 participants (no. 1, 5, 7, 8, 9, 10, 12) submitted words without truncation and 6 participants (no. 2, 3, 4, 6, 11, 13) found out the way to make words shorter. Majority of truncations are *eguraN* that stands for previously mentioned pattern [L + L + H].



Moreover, participant no.6 submitted a word *eguiN* that also stands for same pattern, however it violates left- edge requirement (Irwin, 2011. Itô 1990. Labrune, 2002. Oda, 2006). Truncation *eguiN* can be considered as syncope or mid-clipping. (Irwin, 2011:130-136). Mid-clipping is quite rare type of abbreviation. Moras are usually clipped anywhere in full words. In case of truncation *eguiN*, participant submitted both steps, so we can see that participant used *egurantaiN* as a full formed word. Participant deleted 2 middle moras in word *egurantaiN* by leaving two last ones. In this case, this kind of truncation is ill-formed, but do not violate a pattern.

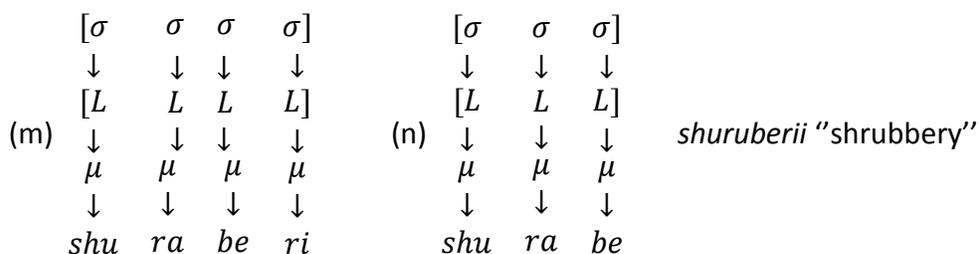
Same participant used mid-clipping for earlier analyzed word “balderdash”. Participant omitted second and forth mora in word *borudedasshu* (~~*borudedasshu*~~) and left only *bodesshu* and pattern [L + L + L]. Although, both abbreviations violate only left-edge rule, it is possible to call them as ill-formed abbreviations. Forasmuch, only one person submitted mid-clippings, they cannot be considered as productive ones. Also, pattern [L + L + L], formed out of only light syllables, maintains our guess that native speakers find it easier to abbreviate by using only light syllable pattern. This shows two unpopular suggestions of two different participants, for word “eglantine” and “balderdash”. Participant nr.13 used patterns [L + L + L] for *eguraNtiN* and participant nr.2 used pattern [L + L + L + L] for word *borudaadasshu* instead of pattern [L + L + H], that was submitted by almost all participants that made abbreviations.

Abbreviations of “accommodation” and “shrubbery” even more strengthen our guesses. Most of the patterns were used for both words consisting of only light syllables. There were two dominant patterns for both words: [L + L + L] and [L + L + L + L]. In case of word “accommodation” all participants that submitted abbreviations used pattern [L + L + L]. Most of them truncated word to *akomo*, which is perhaps a word they have heard before.



Only two persons (participant no. 8, 12) decided do not truncate this word and only one of participants (no.2) created word that violates left-edge requirement, although this person used the same 3 light syllable and 3 mora pattern. This person submitted a truncation *komode* by deleting first mora and two last moras. (~~akomodeeshon~~). This kind of truncation also violates left-edge rule. It means, that pattern for this kind of truncation exist, however we cannot consider this word as well-formed truncation. On the other hand, we cannot ignore this native speaker's answer and can guess that there is possibility, that word *akomo* can exist as exception.

Most of the patterns used for "shrubbery" are also based on light syllables. However unexpectedly, I got wider variety of word truncation processes. I assume that majority of Japanese participants thought, that word "shrubbery" should be truncated just on last mora. 8 out of 13 found out how this word can be abbreviated, other 5 did not truncate words and left them as it was. However, 4 out of 8 abbreviations were made after 4 syllable, 4 mora pattern [L + L + L + L] (participants no. 3, 9, 10, 11). These participants only cut the long vowel of last mora /i/ and they can be mistaken as full words (m).



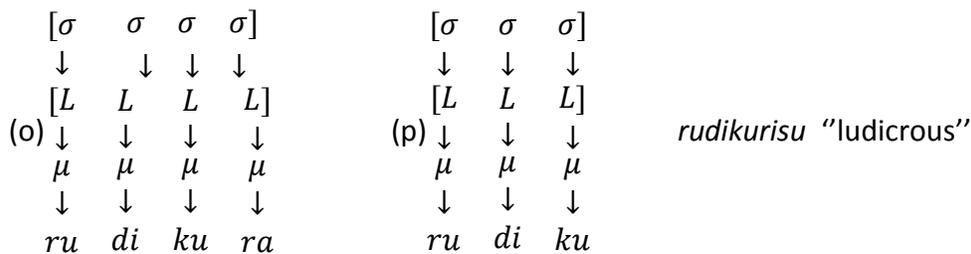
At the first sight, other 4 abbreviations look like productive truncations. However, just 2 truncations do not violate any rules. They are based on pattern [L + L + L]. Truncation looks and sounds more logical and cannot be mistaken for full-formed word. These 2 participants submitted word *shurabe* (n).

Nevertheless, the other 2 words that seem to have right patterns, could not exist as abbreviations. Although, truncation *shuberi* has the same pattern as *shurube*, [L + L + L], it violates left- edge requirement. Whereas participant submitted us just second step we do not know full *katakana* word. It let us just guess what full word should it be: *shuruberii* or *shuraberii*. Although, we have 2 guesses it is still noticeable that full word and truncation

does not match. It looks like truncated word misses second mora in both predictions. This shows that participant deleted second and shortened last long mora in purpose to make an abbreviate word, which do not fit left-edge rule.

As for the second unproductive word *shurabaa*, it has last the vowel lengthening. Participant no.6 submitted both steps: *shurabarii* → *shurabaa*. Here we can see, that full- formed word do not have long /*aa*/ vowel that appears in truncation. In this case abbreviation is inappropriate – the input and output do not match. Itô (1990) in her work she explains this phenomenon: “vowel lengthening occurs only when the form is monomoraic” (Itô, 1990:225). However, as table (ii) demonstrates that monomoraic, monosyllabic patterns are unproductive as loanword truncation. Monomoraic abbreviations exist only in native Japanese word truncation.

Word “ludicrous” had some problem in the first step, where the participants submitted a lot of different full word variations. Although, majority of the participants suggested pattern with light syllable at the beginning [L + L + L + L + L], there was only one participant no.1, who suggested that the first syllable in word ludicrous should have heavy syllable [H + L + L + L + L]. However, this person did not suggest any abbreviation. In that case we can just mention that Japanese native speakers can hear newly-formed words differently. Hence, most of new-formed words have different *katakana* writings. On the other hand, patterns stay same, which is more important for us, than writings. Here we can recognize again, that word is made only of light syllable and as I have predicted in table (3), we have 3 patterns. As I have mentioned before, 2 mora and 2 syllable pattern was the least popular among the participants. In case of “ludicrous” most common patter was 4 syllable [L + L + L + L] pattern. In all, 7 people submitted abbreviations, 4 people (no. 2, 6, 9, 10) submitted 4 syllable pattern, while other 3 participants (no.3, 4, 13) submitted 3 syllable pattern [L + L + L].



Now, when we have analyzed all these four words we can predict where accented mora should be. Words *akomodeeshoN* and *shuraberii* should be accented on fourth mora, which is /*de*/ for *akomodeeshoN* and /*ri*/ for *suraberii*. As I have mentioned before it is easier to find possible truncations made out of light syllables, however it concludes some problems of finding accent. In case of *borudaadasshu* we can put accent on third mora /*da*/, on fourth mora /*da*/ and on last mora /*shu*/. However, we have more than one truncation that stands

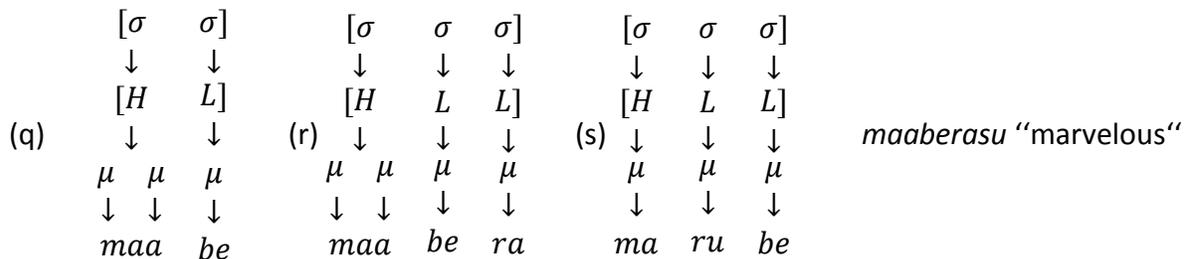
for pattern [L + L + H] and submits word *borudaa* as truncation. That is why accented mora most likely should be on fourth mora /**da**/. A word *eguraNtiN* most likely will be also accented on fourth mora /**ti**/ and word *rudakurisu* should be accented on last mora /**su**/. These guesses are based on the majority of abbreviated submissions *eguraN* and *rudakuri*.

By making further analysis, I have found out that two last words cause most of problems for native speakers. As for word *marvelous*, participants found it difficult to make abbreviations on the second step. And word *herbatious* cause most of the trouble. Participants could not find unanimous syllabified full word in the first step, and later they could not find truncations. It is a bit troublesome process to find predictions for these two words, mostly because of word *herbatious*. For this reason, I decided to go straight to analysis of each word.

Word “*marvelous*”, is similar to first 3 word group that is illustrated in table (1). All participants recognized long vowel at the beginning, which means, that this word has pattern [H + L + L + L]. The only difference between table (1) words is that the first heavy syllable does not stand for nasal, but only long vowel. On the other hand, this word is also a bit similar to table (2) words, because of all light syllables that are following after first heavy one. Nevertheless, there were only 4 participants (no. 2, 3, 6, 10) that submitted abbreviations and all of them differ. Only in word “*marvelous*” allows us to predict the consecutive truncation patterns, because all participants agreed with same full word pattern.

(3)	Marvelous (<i>maaberasu</i>)
	[H + L] <i>maabe</i>
	[L + L] <i>mabe</i>
	[H + L + L] <i>maabera</i>
	[L + L + L] <i>mabera</i>

Only participant no.10 who submitted both steps suggested *maaberasu* as full word. Either way, after first heavy syllable only light syllables follows. It does not have any disturbance for shortening process. Hence, only the second pattern in table (3) was not used. Patterns [H + L], [H + L + L] and [L + L + L] stands for abbreviations *maabe*, *maabera* and *marube* as I predicted above (3).



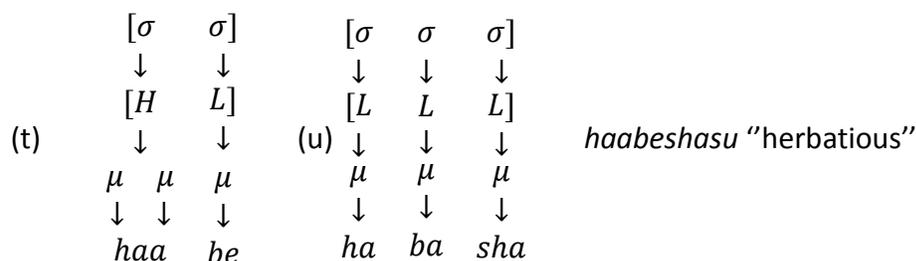
In case of truncation *maberasu*, pattern [L + L + L + L] were submitted. It cannot exist as productive truncation, because without 2 step submission, that participant (no. 6) wrote, a word *maberasu* would be mistaken as full word. None of main truncation rules were used. Participant no.6 only shortened lengthened moras. Same amount of syllables and same word structure were left.

As it was mentioned before, word *herbatious* was troublesome word for native speakers. Participants suggested wide variety of full formed words, which made me consider which patterns are suitable. Such variety of different pattern submission could happen because of my choice of a word. Instead of word “herbaceous”, that could be found in English dictionary, I used newly-coined word, with almost the same meaning and pronunciation. Table (4) shows us all possible full-word patterns of “herbatious”.

(4)	Herbatious
	[L + L + L + L] <i>habatosu</i>
	[L + L + L + L + L] <i>herubatosu</i>
	[L + H + L + L] <i>habeeshasu</i>
	[H + L + L + L] <i>haabashasu, haabeshasu, haabachyasu</i>
	[H + L + L + L + L] <i>haabatiasu</i>
	[H + H + L + L] <i>haabeeshasu</i>
	[H + H + H] <i>haabeeshoN</i>

This wide variety of patterns show us that participants already struggled on the first step, where they had to make full word and stopped there. In that case, only 3 persons (no. 2, 6, 3) find out possible truncations. Nevertheless, one abbreviation out of these 3, cannot exist as productive truncation. After abbreviation a word *haabeishasu* was edited as *habeshasu*. If participant would submit us only the second step, a word *habeshasu* would be mistaken as full word – not abbreviation, same as truncations *maberasu* and *shuruberi*. As we can see, participant no.6 only omitted lengthened vowels without changing a structure of full word. Participant also left 4 syllables, same number of syllables as full word has. In this situation there is possible pattern, but abbreviation still sounds as full word.

Other two truncations, that both have same pattern [H + L + L + L], which is also most common one, have productive abbreviations. Although, word *habasha*, same as word *habeshasu* that was analyzed above, misses a long vowel, I couldn't find any rule, which could be violated. In this case, *habasha* with pattern [L + L + L] and *haabe* with pattern [H + L], are only submitted truncations for word “herbatious”.



As I have mentioned above, these two words were troublesome and a bit tricky for native speakers. As a result, I also had some problems while analyzing them. In this case, it was also a bit problematic to found accented mora, because of the low number of submitted abbreviations. I could not depend on most popular truncation, because all submitted abbreviations had only one participant for different patten. That is why word *maaberasu* have a possibility to have 3 different accents such as first mora /**ma**/ second mora /**ra**/and last mora /**su**/. Also we used alternative word for marvelous – *maruberasu*. This word should have accented forth mora /**ra**/. In case of the word *haabeshasu* accented mora can be /**ha**/, /**be**/ or last mora /**su**/.

3.3.2. COMPOUND WORDS

When I have started to analyze answers of participants, I have realized that majority of native speakers violate most-left requirement and only participant no. 3 and 12 made compound truncations (table 17) without any rule violation, which is minority of participants. If single words, that violate rules, could have exceptions, then compounds seem not to have a lot of them. In this case it is easier to detect unproductive compounds than single words. Therefore, I have found a few answers that only merged submitted words into one long compound word or had too big number of moras.

As a result, I have decided to classify submitted words in 4 categories:

(6)	1.	No compound abbreviation submitted
	2.	Violate most-left requirement
	3.	Violate only in numbers of mora
	4.	Do not violate any rules, can be productive compound abbreviation

Firstly, I have decided to ignore first category. Compounds are not truncated and also do not show any results. (Table 18)

Thus, I immediately started to examine second category. For my surprise, majority of participants chose the beginning of first word and the ending of the second one. In this case, compound truncations like that would be considered as ill-formed. Most of the participants submitted word *toropiberii* for “tropical shrubbery”, *eNchaNdasshu* for “enchanted balderdash” and *teNpodeeshoN* for “temporary accommodation”. For words “marvelous rascal”, “herbaceous eglantine” and “conspicuous confidence” answers varied. By any means, they have same structure, where they partly violate left-edge requirement. On the other hand, two participants (Table 19) submitted compounds that had opposite structure. First element was clipped and only ending was remained, second element of compound did not violate most-left rule: *supikoNfi* and *poraako*. And only one (Table 19) word *supifide* violated this rule for both elements. In the case of this word, it is quite understandable why this participant chose this kind of truncation. As we will analyze later, right pattern for “conspicuous confidence” should be *koNkoN*, which sounds a bit bizarre. However, it does not violate 4 μ rule. I have found one odder truncation. A person (Table 19) changed elements positions in truncation, in the other words instead of submitted compound “conspicuous confidence”, participant used “confidence conspicuous” and submitted word *koNfipishasu*. Even if it would be right to change places, words violates most-left requirement in second element and have more than 4 μ . Even if we will decide to ignore most-left requirement, all the words in this category cannot be called as productive ones. The reason is that all of them consist more than 4 μ , as I have mentioned before.

The words in third category look fine at the first sign. They all follow the most-left rule. However, most of them have 5 or 6 moras. Majority of participants used same truncated single words and merged them (i.e. *teNpoakomo*, *eNchaNborudaa*, *toropishurabe*, *koNsupikoNfi*, *haabaeguraN*). Also, I have noticed, that some participants (no. 6, 11) like to combine first truncated element of compound word and full second element as *haabeeguraNtaiN* for “herbaceous eglantine” or *koNsupikoNfideNsu* for “conspicuous confidence” (Table 20). As I have mentioned before, participants found “conspicuous confidence” compound to be problematic, because of same first syllable for both elements. Participant no. 10, submitted to use “to” between both truncations, that indicates “and” in Japanese. In this case, participant suggested using *koNsutokoNfi* and *eNchantobaruderu* (Table 20). Also I am uncertain about compound “marvelous rascal”. First element of compound word ends with bimoraic ending *-rasu*, at the same time second element rascal starts with bimoraic beginning *rasu-*, which made me think how should I categorized them. By any means, I hope that participants violated only one rule – they did not violate most-left rule and 4 μ rule at the same time. In this category, there is one more word that disobeys 4 μ like most of them in this category. A truncated compound *toropisshurii* has proper beginning that first element follows all rules; however, second element’s input do not match output

that was described by second higher raked constrain. It seems, that second element missing middle part, which is unacceptable for compound truncation.

Finally, fourth category, do not violate any rules and can be considered as productive compound abbreviation. All submitted words are based on double truncation and pattern $[2\mu + 2\mu]$: *toroshura* for "tropical shrubbery", *koNkoN* for "conspicuous confidence", *haaegu* for "herbaceous eglantine", *eNboru* for "enchanted balderdash" and *maarasu* for "marvelous rascal". Only "temporary accommodation" do not have any productive compound. Closest submission would be *teNpoakomo*, which is 2 mora more than productive ones should be. Irwin (2011) in his book mentioned that 5-6 mora compound truncations are truly rare. In this case, I will agree with native speakers and count it as an exception. I can just predict that productive and non-violent truncation for this compound loanword should be *teNako*. These productive compound abbreviations confirm Irwin's (2011) words, that almost all Japanese compound loanwords are truncated by using $[2\mu + 2\mu]$ pattern.

For the short summary, I have realized that most often used category was category no. 2. It violates left-most requirement, which is bizarre. Even in Sino-Japanese, left-edge requirement is used whether for compound truncations or name truncations, which were mentioned above. Answers show us, that in modern Japanese, "old" rules can be changed in order to improve language.

3.4. THE RESULTS

As we can see from analysis, newly-formed loanwords with more than 4 moras can be truncated. According to Japanese linguistics, it is natural process to truncate them and adopt them into everyday Japanese language. However, as the results show, the new-formed loanwords are a hard task for native speakers. Most of the answers differ and it makes hard to find a precise answer that could satisfy all rules and requirements, which depend on each other and respect hierarchy and rankings.

My analysis shows that most common pattern that participants used for their truncations consists only of 3 light syllables. Pattern $[L + L + L]$ were used up to 19 times. It confirms, George's (2011) and Irwin's (2011) results on most used patterns for already existing abbreviations. However, the least used pattern was $[L + L]$, which was submitted by Irwin (2011) as second most used pattern. Based on my results, it is possible to expand the patterns that were examined in section 3.2.1. In general, I found 17 possible patterns (Table

21). In this case, newly-formed patterns were counted as unproductive; however, their existence cannot be ignored.

Compound words did not show many results. In all cases it was possible to detect, that most used abbreviation was 4 mora truncation. Furthermore, participants submitted lots of bizarre and unexpected compounds that do not fit any rule, that were examined in this paper. In this case, new rules should be adapted to modern Japanese language based on results of my analysis. On the other hand, both single and compound words mostly violated left-edge requirement. By some means, native speakers chopped parts that were not necessary to be deleted or cut.

Nevertheless, sometimes we just have to trust the majority answers of the native speakers even if they do violate some rules. Not always it is necessary to trust rules, and ignore native speaker answers. Even if they do not use rules for making truncations, they depend on unwritten rules, which only native speakers bear in their heads. After all, rules were created after long examination of already existing abbreviations. In this case, native Japanese speakers cannot be wrong.

In the process of analysis, I discovered that not only abbreviated words' results are dissimilar, but also syllabified full newly-formed words were different. It can be one of the reasons, why I got so many different answers. However, as I have suggested before, we can guess that some participants, do have poor English language knowledge and, because Japanese form their loanwords on sounds and pronunciation, we can suspect that it was an important factor.

I also have find out, that Japanese females tried do not make any abbreviations, unlike Japanese male participants, especially on single words. In this case, it would be interesting to leave this for the future research, and get to know why Japanese females abbreviated just minority of words and decided to leave it as full-formed loanwords.

4. CONCLUSIONS

This paper shows a variety of patterns and rules that help to understand methods of loanwords truncation. However, as it was submitted in Chapter 2, truncation processes started long time ago and it was applied to Sino-Japanese words. Nowadays, same process is adjusted to loanword abbreviations. Of course, all these loanword formations are being improved for better truncations and understandings, by adding more accurate rules and requirements that fit only borrowings.

On the other hand, Japanese native speakers are not taught how to truncate words in school; it is in their nature. In this case, they use their intuition and make a word without relying on rules. It also means that they are making shortenings without any deeper analysis. Nevertheless, rules, which were examined in section 2.4., were made by analyzing already existing loanword truncations. Therefore, the answers, that participants have submitted, cannot be considered as wrong ones. However, results of analysis shows that native speakers have submitted only few irregular words that violate one or more rules and majority of abbreviated words can be called productive. It confirms the fact, that all rules have exceptions and irregular words.

This paper also answers a question whether Japanese can form new loanwords, abbreviate them and compound them into one, even if they do it without given rules and patterns.

NOTES

1. Haiku is traditional Japanese poem, which consists of 3 lines of 5 moras in first line, 7 moras in middle line and 5 moras again in last line.
2. Poser (1990) calls them rustic girl's names. These kinds of names were used for maids and prostitutes; however they are not popular these days.
3. All unproductive patterns or mapping will be marked with a star (*).
4. Japanese accent is called pitch accent. This accent is different from stress accent in English. It is possible that every syllable can have an independent accent and a lot of words can be left unaccented. Also Japanese pitch accent depends on dialects. In this paper, standard Japanese (Tokyo dialect) pitch accent was used.
5. Words in () are most suggested new-formed full words by participants themselves. In this case, they are used as representative words.

APPENDIX

SINGLE WORDS

1. LUDICROUS

Participant No.	Gender	Truncated word	Steps taken	Pattern that was used	Could exist as truncation/ Could not exist
1.	Female	<i>ruudikurosu</i>	1st	-	No
2.	Male	<i>rudikurasu</i> → <i>rudikura</i>	Both steps	[L + L + L + L]	Yes
3.	Female	<i>rudaku</i>	2nd	[L + L + L]	Yes
4.	Female	<i>ridikyu</i>	2nd	[L + L + L]	Yes
5.	Female	<i>rudikurasu</i>	1st	-	No
6.	Male	<i>rudikurasu</i> → <i>rudikura</i>	Both steps	[L + L + L + L]	Yes
7.	Female	<i>rudikurasu</i>	1st	-	No
8.	Female	<i>rudikyurasu</i>	1st	-	No
9.	Male	<i>radikurasu</i> → <i>radikura</i>	Both steps	[L + L + L + L]	Yes
10.	Female	<i>rudakurisu</i> → <i>rudakuri</i>	Both steps	[L + L + L + L]	Yes
11.	Male	<i>rudikurasu</i>	1st	-	No
12.	Male	<i>rudikurasu</i>	1st	-	No
13.	Male	<i>rudikurasu</i> → <i>rudiku</i>	Both steps	[L + L + L]	Yes

2. SHRUBBERY

Participant No.	Gender	Truncated word	Steps taken	Pattern that was used	Could exist as truncation/ Could not exist
1.	Female	<i>shuraberii</i>	1st	-	No
2.	Male	<i>shuruberii</i> → <i>shurube</i>	Both steps	[L + L + L]	Yes
3.	Female	<i>shurabari</i>	2nd	[L + L + L + L]	Yes
4.	Female	<i>shuberi</i>	2nd	[L + L + L]	No
5.	Female	<i>shuuberii</i>	1st	-	No
6.	Male	<i>shurabarii</i> → <i>shurabaa</i>	Both steps	[L + L + H]	No
7.	Female	<i>shurabberii</i>	1st	-	No
8.	Female	<i>shuraberii</i>	1st	-	No
9.	Male	<i>shuraberi</i>	2nd	[L + L + L + L]	Yes
10.	Female	<i>shuraberi</i>	2nd	[L + L + L + L]	Yes

11.	Male	<i>shurabari</i>	2nd	[L + L + L + L]	Yes
12.	Male	<i>shuraberii</i>	1st	-	No
13.	Male	<i>shurabarii</i> → <i>shuraba</i>	Both steps	[L + L + L]	Yes

3. ENCHANTING

Participant No.	Gender	Truncated word	Steps taken	Pattern that was used	Could exist as truncation/ Could not exist
1.	Female	<i>eNchaNtiNgu</i> → <i>eNchaN</i>	Both steps	[H + H]	Yes
2.	Male	<i>eNchaNtiNgu</i> → <i>eNcha</i>	Both steps	[H + L]	Yes
3.	Female	<i>eNcha</i>	2nd	[H + L]	Yes
4.	Female	<i>eNchaN</i>	2nd	[H + H]	Yes
5.	Female	<i>eNchaNtiNgu</i>	1st	-	No
6.	Male	<i>eNchaNtiNgu</i> → <i>eNcha</i>	Both steps	[H + L]	Yes
7.	Female	<i>eNchaNtiNgu</i>	1st	-	No
8.	Female	<i>eNchaNtiNgu</i>	1st	-	No
9.	Male	<i>eNchaNtiN</i>	2nd	[H + H + H]	No
10.	Female	<i>eNchaNto</i>	2nd	[H + H + L]	No
11.	Male	<i>eNchaN</i>	2nd	[H + H]	Yes
12.	Male	<i>eNchaNtiNgu</i>	1st	-	No
13.	Male	<i>eNchaNtiNgu</i> → <i>eNchaN</i>	Both steps	[H + H]	Yes

4. HERBATIOUS

Participant No.	Gender	Truncated word	Steps taken	Pattern that was used	Could exist as truncation/ Could not exist
1.	Female	<i>haabeishoN</i>	1st	-	No
2.	Male	<i>haabashasu</i> → <i>habasha</i>	Both steps	[L + L + L]	Yes
3.	Female	<i>haabe</i>	2nd	[H + L]	Yes
4.	Female	<i>habatosu</i>	1st	-	No
5.	Female	<i>haabeishasu</i>	1st	-	No

6.	Male	<i>haabeishasu</i> → <i>habeshasu</i>	Both steps	Truncation exists, but no pattern used	No
7.	Female	<i>haabashasu</i>	1st	-	No
8.	Female	<i>habeishasu</i>	1st	-	No
9.	Male	<i>haabachiasu</i>	1st	-	No
10.	Female	<i>herubatosu</i>	1st	-	No
11.	Male	<i>haabeshasu</i>	1st	-	No
12.	Male	<i>haabatiasu</i>	1st	-	No
13.	Male	<i>haabeshasu</i>	1st	-	No

5. ACCOMMODATION

Participant No.	Gender	Truncated word	Steps taken	Pattern that was used	Could exist as truncation/ Could not exist
1.	Female	<i>akomo</i>	2nd	[L + L + L]	Yes
2.	Male	<i>akomodeeshoN</i> → <i>komode</i>	Both steps	[L + L + L]	No
3.	Female	<i>akomo</i>	2nd	[L + L + L]	Yes
4.	Female	<i>akomo</i>	2nd	[L + L + L]	Yes
5.	Female	<i>akomo</i>	2nd	[L + L + L]	Yes
6.	Male	<i>akomodeeshoN</i> → <i>akomo</i>	Both steps	[L + L + L]	Yes
7.	Female	<i>akomo</i>	2nd	[L + L + L]	Yes
8.	Female	<i>akomodeeshoN</i>	1st	-	No
9.	Male	<i>akomodeeshoN</i> → <i>akomo</i>	Both steps	[L + L + L]	Yes
10.	Female	<i>akomodeeshoN</i> → <i>akomo</i>	Both steps	[L + L + L]	Yes
11.	Male	<i>akomo</i>	2nd	[L + L + L]	Yes
12.	Male	<i>akomodeeshoN</i>	1st	-	No
13.	Male	<i>akomodeeshoN</i> → <i>akomo</i>	Both steps	[L + L + L]	Yes

6. EGLANTINE

Participant No.	Gender	Truncated word	Steps taken	Pattern that was used	Could exist as truncation/ Could not exist
1.	Female	<i>eguraNtiN</i>	1st	-	No
2.	Male	<i>eguraNtiN</i> → <i>eguraN</i>	Both steps	[L + L + H]	Yes
3.	Female	<i>eguraN</i>	2nd	[L + L + H]	Yes
4.	Female	<i>eguraN</i>	2nd	[L + L + H]	Yes
5.	Female	<i>eguraNtaiN</i>	1st	-	No
6.	Male	<i>eguraNtaiN</i> → <i>eguiN</i>	Both steps	[L + L + H]	Yes
7.	Female	<i>eguraNtiiN</i>	1st	-	No
8.	Female	<i>eguraNtiN</i>	1st	-	No
9.	Male	<i>eguraNtiN</i>	1st	-	No
10.	Female	<i>eguraNchiNe</i>	1st	-	No
11.	Male	<i>eguraN</i>	2nd	[L + L + H]	Yes
12.	Male	<i>eguraNtaiN</i>	1st	-	No
13.	Male	<i>eguraNtiN</i> → <i>egura</i>	Both steps	[L + L + L]	Yes

7. MARVELOUS

Participant No.	Gender	Truncated word	Steps taken	Pattern that was used	Could exist as truncation/ Could not exist
1.	Female	<i>maaberasu</i>	1st	-	No
2.	Male	<i>maaberasu</i> → <i>maabera</i>	Both steps	[H + L + L]	Yes
3.	Female	<i>maabe</i>	2nd	[H + L]	Yes
4.	Female	<i>maaberasu</i>	1st	-	No
5.	Female	<i>maaberasu</i>	1st	-	No
6.	Male	<i>maaberasu</i> → <i>maberasu</i>	Both steps	[L + L + L + L]	No
7.	Female	<i>maaberasu</i>	1st	-	No
8.	Female	<i>maaberasu</i>	1st	-	No
9.	Male	<i>maaberasu</i>	1st	-	No
10.	Female	<i>maaruberasu</i> → <i>marube</i>	Both steps	[L + L + L]	Yes

11.	Male	<i>maaberasu</i>	1st	-	No
12.	Male	<i>maaberasu</i>	1st	-	No
13.	Male	<i>maabyurasu</i>	1st	-	No

8. BALDERDASH

Participant No.	Gender	Truncated word	Steps taken	Pattern that was used	Could exist as truncation/ Could not exist
1.	Female	<i>boodaadaashu</i>	1st	-	No
2.	Male	<i>barudaadasshu</i> → <i>barudada</i>	Both steps	[L + L + L + L]	Yes
3.	Female	<i>borudaa</i>	2nd	[L + L + H]	Yes
4.	Female	<i>baru</i>	2nd	[L + L]	Yes
5.	Female	<i>barudaadaashu</i>	1st	-	No
6.	Male	<i>borudedasshu</i> → <i>bodesshu</i>	Both steps	No pattern used	Yes
7.	Female	<i>barudaadasshu</i>	1st	-	No
8.	Female	<i>borudaadasshu</i>	1st	-	No
9.	Male	<i>borudaadasshu</i>	1st	-	No
10.	Female	<i>baruderudasshu</i>	1st	-	No
11.	Male	<i>borudaadasshu</i>	1st	-	No
12.	Male	<i>boorudaadasshu</i>	1st	-	No
13.	Male	<i>barudaadasshu</i> → <i>barudaa</i>	Both steps	[L + L + H]	Yes

9. CONFIDENCE

Participant No.	Gender	Truncated word	Steps taken	Pattern that was used	Could exist/ Could not exist
1.	Female	<i>koNfideNsu</i>	1st	-	No
2.	Male	<i>koNfideNsu</i> → <i>koNfide</i>	Both steps	[H + L + L]	Yes
3.	Female	<i>koNfi</i>	2nd	[H + L]	Yes
4.	Female	<i>koNfideNsu</i>	1st	-	No

5.	Female	<i>koNfideNsu</i>	1st	-	No
6.	Male	<i>koNfideNsu</i> → <i>koNfide</i>	Both steps	[H + L + L]	Yes
7.	Female	<i>koNfideNsu</i>	1st	-	No
8.	Female	<i>kaNfideNsu</i>	1st	-	No
9.	Male	<i>koNfideNsu</i>	1st	-	No
10.	Female	<i>koNfideNsu</i>	1st	-	No
11.	Male	<i>koNfideNsu</i>	1st	-	No
12.	Male	<i>koNfideNsu</i> → <i>koNfi</i>	Both steps	[H + L]	Yes
13.	Male	<i>koNfideNsu</i>	1st	-	No

10. CONSPICUOUS

Participant No.	Gender	Truncated word	Steps taken	Pattern that was used	Could exist as truncation/ Could not exist
1.	Female	<i>koNsupikyusu</i> → <i>koNsupi</i>	Both steps	[H + L + L]	Yes
2.	Male	<i>koNsupikyusu</i> → <i>koNsupi</i>	Both steps	[H + L + L]	Yes
3.	Female	<i>koNsupi</i>	2nd	[H + L + L]	Yes
4.	Female	<i>koNsupi</i>	2nd	[H + L + L]	Yes
5.	Female	<i>koNsupikyasu</i>	1st	-	No
6.	Male	<i>koNsupikysusu</i> → <i>koNsupi</i>	Both steps	[H + L + L]	Yes
7.	Female	<i>koNsupikyusu</i>	1st	-	No
8.	Female	<i>koNsupikyusu</i>	1st	-	No
9.	Male	<i>koNsupikyusu</i>	1st	-	No
10.	Female	<i>koNsupikyasu</i> → <i>koNsupi</i>	Both steps	[H + L + L]	Yes
11.	Male	<i>koNsupi</i>	2nd	[H + L + L]	Yes
12.	Male	<i>koNsupikyusu</i>	1st	-	No
13.	Male	<i>koNsupikyusu</i> → <i>koNsupi</i>	Both steps	[H + L + L]	Yes

COMPOUND WORDS

11. TROPICAL + SHRUBBERY

Participant no.	Compound word	Number of moras	Category
1.	<i>toropishura</i>	5 μ	3
2.	<i>toropikarushuruberii</i>	10 μ	1
3.	<i>toroshura</i>	4 μ	4
4.	<i>toroberii</i>	5 μ	2
5.	<i>toropikarushurubarii</i>	10 μ	1
6.	<i>toropisshurii</i>	7 μ	3
7.	<i>toroberi</i>	5 μ	2
8.	<i>toropikarusuraberii</i>	10 μ	1
9.	<i>toroberii</i>	5 μ	2
10.	<i>toropishurabe</i>	6 μ	3
11.	<i>toropikarushuraberii</i>	9 μ	1
12.	<i>toropiberii</i>	6 μ	2

12. HERBATIOUS + EGLANTINE

Participant no.	Compound word	Number of moras	Category
1.	<i>haabegura</i>	5 μ	2
2.	<i>haabashasueguraNtiN</i>	11 μ	1
3.	<i>haaegu</i>	4 μ	4
4.	<i>haberaNtisu</i>	6 μ	2
5.	<i>haabeeshasueguraNtaiN</i>	13 μ	1
6.	<i>haabeguraNtaiN</i>	9 μ	3
7.	<i>haabaeguraN</i>	7 μ	3
8.	<i>haabeishasueguraNtaiN</i>	13 μ	1
9.	<i>haabachiN</i>	5 μ	2
10.	<i>herubaegura</i>	6 μ	3
11.	<i>haabeiguraN</i>	7 μ	2
12.	<i>haaegu</i>	4 μ	4

13. CONSPICUOUS + CONFIDENCE

Participant no.	Compound word	Number of moras	Category
1.	<i>supikoNfi</i>	5 μ	2
2.	<i>koNsupikyuasukoNfideNsu</i>	13 μ	1

3.	<i>koNkoN</i>	4μ	4
4.	<i>koNfipishasu</i>	6μ	2
5.	<i>koNsupikyuasukoNfideNsu</i>	13μ	1
6.	<i>koNsupideNsu</i>	7μ	2
7.	<i>koNsupikoNfi</i>	7μ	3
8.	<i>koNsupikyuasukoNfideNsu</i>	13μ	1
9.	<i>koNsuoNsu</i>	7μ	2
10.	<i>koNsutokoNfi</i>	7μ	3
11.	<i>koNsupikoNfideNsu</i>	10μ	3
12.	<i>supifide</i>	4μ	2

14. ENCHANTING + BALDERDASH

Participant no.	Compound word	Number of moras	Category
1.	<i>eNchaNdasshu</i>	7μ	2
2.	<i>eNchaNtiNgubarudaadasshu</i>	14μ	1
3.	<i>eNboru</i>	4μ	4
4.	<i>eNchaNdasshu</i>	7μ	2
5.	<i>eNchaNtiNgubarudaadaashu</i>	14μ	1
6.	<i>eNchaNdidasshu</i>	8μ	2
7.	<i>eNchaNbarudaa</i>	8μ	3
8.	<i>eNchaNtiNguborudaadaashu</i>	14μ	1
9.	<i>eNchasshu</i>	5μ	2
10.	<i>eNchaNtobaruderu</i>	9μ	3
11.	<i>eNchaNborudaa</i>	8μ	3
12.	<i>eNboru</i>	4μ	4

15. TEMPORARY + ACCOMMODATION

Participant no.	Compound word	Number of moras	Category
1.	<i>teNpodeeshoN</i>	7μ	3
2.	<i>teNporariiakomodeeshoN</i>	13μ	3
3.	<i>teNpoakomo</i>	6μ	4
4.	<i>teNpoakomo</i>	6μ	3
5.	<i>teNporariiakomodeeshoN</i>	13μ	1
6.	<i>teNporadeishoN</i>	8μ	3
7.	<i>teNpoakomo</i>	6μ	3
8.	<i>teNporariiakomodeeshoN</i>	13μ	1
9.	<i>teNpodeeshoN</i>	7μ	2

10.	<i>teNpoakomo</i>	6μ	2
11.	<i>teNpoakomo</i>	6μ	3
12.	<i>poraako</i>	4μ	4

16. MARVELOUS + RASCAL

Participant no.	Compound word	Number of moras	Does it violate any rule or not
1.	<i>maaberasukaru</i>	7μ	3
2.	<i>maaberasukaru</i>	7μ	3
3.	<i>maarasu</i>	4μ	4
4.	<i>mabereesharu</i>	6μ	3
5.	<i>maaberasurasukaru</i>	9μ	1
6.	<i>maaberasukaru</i>	7μ	3
7.	<i>maaberasukaru</i>	7μ	3
8.	<i>maaberasurasukaru</i>	9μ	1
9.	<i>maabekaru</i>	5μ	2
10.	<i>maruberasu</i>	5μ	2
11.	<i>maaberasukaru</i>	7μ	3
12.	<i>maarasu</i>	4μ	4

17. Participants that mostly used category 4.

	Categories used by participant no.3	Categories used by participant no. 12
Tropical + shrubbery	4	2
Herbacious + eglantine	4	4
Conspicuous + confidence	4	2
Enchanting + balderdash	4	4
Temporary + accommodation	3	2
Marvelous + rascal	4	4

18. Participants that mostly used category 1.

	Categories used by participant no.2	Categories used by participant no.5	Categories used by participant no.8
Tropical + shrubbery	1	1	1
Herbacious + eglantine	1	1	1
Conspicuous + confidence	1	1	1
Enchanting + balderdash	1	1	1
Temporary + accommodation	1	1	1
Marvelous + rascal	3	1	1

19. Bizarre truncations

	Participant no. 1	Participant no. 12	Participant no. 4
Conspicuous + confidence	<i>supikoNfi</i>	<i>supifide</i>	<i>koNfipishasu</i>
Temporary + accommodation	<i>teNpodeeshoN</i>	<i>poraako</i>	<i>teNpoakomo</i>

20. Exceptions for category 3

	Participant no. 6	Participant no. 10	Participant no.11
Conspicuous + confidence	<i>koNsupideNsu</i>	<i>koNsutokoNfi</i>	<i>koNsupikoNfideNsu</i>
Enchanting + balderdash	<i>eNchaNdidasshu</i>	<i>eNchaNtobaruderu</i>	<i>eNchaNborudaa</i>
Herbacious + eglantine	<i>haabeeguraNtaiN</i>	<i>herubaegura</i>	<i>haabeiguraN</i>
Tropical + shrubbery	<i>toropisshurii</i>	<i>toropishurabe</i>	<i>toropikarushuraberii</i>

21. General 17 patterns

1.	[L]*
2.	[H]*
3.	[L + L]
4.	[L + H]*
5.	[H + L]
6.	[H + H]
7.	[L + L + L]
8.	[L + L + L] (by deleting middle parts of a full-formed word)
9.	[L + L + L] (by deleting first mora)

10.	[L + L + H]
11.	[L + L + H] (by lengthening last mora of abbreviation)
12.	[L + H + L]*
13.	[H + L + L]
14.	[H + H + L] (by shortening word till 5 moras)
15.	[H + H + H] (by shortening word till 6 moras)
16.	[L + L + L + L]
17.	[L + L + L + L] (by deleting long vowel at the beginning of truncation)

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